

The Digital Divide: It's the content, stupid

*Andrés Guadamuz González**

Freedom of the Internet is guaranteed only to those who own a computer.

Marjorie Heins

Introduction

The digital divide has been the subject of significant interest in recent years from the press, the academic community and even from governments and international organisations. The debate so far has been centred in the actual access to Information and Communication Technologies (ICTs) from a specific telecommunications perspective, with specific preoccupation about physical access to the internet. As such, the problem of the digital divide has generated more literature in the social sciences to the detriment of other fields of study. Nevertheless, there has been some legal interest in the area, particularly as a possible policy issue with regards to universal access legislation.¹

The emphasis on access to the internet has left one specific area with a diminished role, the problem of actual content online. This has not been such an important issue so far because it has generally been believed that access to the internet will be very difficult to achieve in the poorest regions of the world. This work will try to dispel this by showing that access to the internet is growing, even in very poor countries. Therefore, the most important issue is not one of connectivity – despite the fact that this is still a problem – but that of content. What awaits people in developing countries when they connect online? Will they be able to afford the content? Will they be able to understand it?

At the heart of the content question lies the issue of intellectual property. Copyright must not be underestimated when dealing with the issue of access to technology by developing countries, as there are some areas in which this method of ownership is indeed important for the problem explored. Content on the internet has traditionally

* Lecturer in Law, University of Edinburgh

¹ For example, see: Hammond AS, "The Telecommunications Act of 1996: Codifying the Digital Divide", *Federal Communications Law Journal*, Vol.50 (1) 1997, p.157.

been offered for free, a trend that is changing rapidly with a surge in content-rich sites offered under subscription. The digital divide may end up being a problem of availability of online content, particularly of useful content for developing countries, such as access to scientific works.

This work will start by analysing the digital divide, its causes and future. Then and the article will concentrate on the subject of content to online materials, and some legal tools that could assist in tackling the content divide.

1. The Digital Divide

1.1 Definitions

One of the main difficulties in dealing with such a general term as “digital divide” is that it has become an instant sound-bite that encompasses any sort of inequality in the use of information and communication technologies. There is a danger with these instantly popular phrases to become simply an empty buzz-word bereft of any sort of meaning. This is why a clear understanding of what is meant by this term is of immediate concern.

In the widest possible context, the digital divide is usually referred to as the “*inequality of access to the Internet*.”² The emphasis on the issue of access to the global network is made because there is growing belief amongst many observers that the internet represents a momentous shaping force of modern society in almost all aspects of it, from education to politics.³ The possibility of empowering people by providing them access to the internet is seen as a positive step that must be encouraged. This assumption that the internet is an excellent feature for society as a whole carries the inevitable consequence that those who lack access will be at a disadvantage to those able to connect to the Web. This is based on the idea that information has become the commodity of the future, and those without access to it will be relegated to poverty. In the words of Titus Alexander, “*In a world governed by information, exclusion from information is as devastating as exclusion from land in an agricultural age.*”⁴

² Castells, M. *The Internet Galaxy*, Oxford: Oxford University Press, 2001, p.248.

³ For an excellent discussion on the impact of the internet in democratic society, see: Poster, M. *CyberDemocracy: Internet and the Public Sphere*, 1995. @: <<http://www.hnet.uci.edu/mposter/writings/democ.html>>

⁴ Alexander, T. *Unravelling Global Apartheid: An Overview of World Politics*, Cambridge: Polity Press, 1996, p.195

The definition provided in the last paragraph is still too broad. Norris usefully enhances the definition of digital divide to explain the different aspects in which it will manifest itself. She specifies that there are three types of digital divide:

*The global divide refers to the divergence of Internet access between industrialized and developing societies. The social divide concerns the gap between information rich and poor in each nation. And finally within the online community, the democratic divide signifies the difference between those who do and do not, use the panoply of digital resources to engage, mobilize and participate in public life.*⁵

There are several important points in this definition. Firstly, the main problem with access is not access to telecommunication tools in general, or ICTs in a more specific way. Rather, Norris centres her definition on internet access, just as Castells does. Other researchers use a much wider definition, such as Sciadas, who see the digital divide as the gap in access to ICTs, measuring it in the level of “ICT-ization” achieved by a country.⁶ This is a useful delimitation of the subject, but it may prove too broad. There can be no doubt that internet access is not the only important factor in the area of information technology advance in developing countries; opportunities for access to computers and other communication technologies are also important, in particular in the area of creating efficient government structures. To this end, the training to use computers is also very important. Nevertheless, the narrow definition of the digital divide will be favoured here.

The second part of the definition worthy of notice is the distinction of the digital divide in three different spheres – global, domestic and political. Although the social divide and the democratic divide display a wide variety of very interesting issues that deserve further study, the so-called global divide is of more relevance for the present work. Nevertheless, a look at domestic differences in access to the information society within developed nations can show interesting facts that can be extrapolated later towards analysing the global perspective and finding solutions.

The best set of figures for domestic access to the internet can be found in the United States, where most relevant studies have taken place. Figures for 2000 showed a marked difference in access to the internet between racial and social groups. For

⁵ Norris, P. *Digital Divide: Civic Engagement, Information Poverty and the Internet Worldwide*, Cambridge: Cambridge University Press, 2001, p.4.

⁶ Sciadas, G. *Monitoring the Digital Divide*. Report by UNESCO Chairs in Communication (Orbricom), 2002. @: <<http://www.orbricom.uqam.ca/projects/ddi2002/ddi2002.pdf>>

example, while 46% of Whites had access to the internet, only 23.5% of Blacks and 23.6% of Hispanics were online.⁷ At the same time, 86% of households earning \$75,000 USD and above per annum had internet access, compared to 12.7% of households earning less than \$15,000 USD.⁸ Statistics like these indicate marked contrast in access to the information network along income lines, which is to be expected as the internet requires that the user have access to proper tools and infrastructure, such as a computer and phone lines.

Despite these figures, many commentators have noted that the digital divide in the United States is decreasing. For example, in 2002 the amount of people online in households with incomes lower than \$15,000 USD had increased to 25%, and access in both Black and Hispanic households had also increased.⁹ This trend shows that the digital divide is not irreversible, but it may be misleading to extrapolate too much from the domestic case to access in a global context. After all, the United States already has a comprehensive infrastructure in place, which cannot be said for most developing countries.¹⁰

This is why every effort to encourage access to the global computer network must take into account the appalling state of telephony in the developing world. By the end of the 1990s, people in the richest countries had at their disposal 74% of all the telephone lines around the world.¹¹ Countries in the OECD have an average 523 telephone lines per thousand people, while the high-income OECD countries have an average 597. In contrast, developing countries in general average 87 telephone lines per thousand inhabitants. The situation in the least developed countries is even more worrying, with only 6 telephone lines per thousand people.¹²

The figures do not lie when dealing with the facts about the digital divide. Using internet access as an illustration, it is thought that only 2% of the world's population

⁷ Digital Divide Network. *Digital Divide Basics Fact Sheet*, 2001. @: <<http://www.digitaldividenetwork.org/content/stories/index.cfm?key=168>>

⁸ Ibid.

⁹ National Telecommunications and Information Administration. *A Nation Online: How Americans Are Expanding Their Use of the Internet*, February 2002, Chapter 8. @: <<http://www.ntia.doc.gov/ntiahome/dn/html/toc.htm>>

¹⁰ For some UK figures, see: Huntley, J; McKerrel, N and Ashgar, S. "Universal Service, the Internet and the Access Deficit", (2004) 1:2 *SCRIPT-ed*, @: <<http://www.law.ed.ac.uk/ahrb/script-ed/issue2/broadband.asp>>

¹¹ Castells, *The Rise of the Network Society*, Op. cit.

¹² UNDP. *Human Development Indicators 2003: Telephone mainlines (per 1,000 people)*. 2003. @: <http://www.undp.org/hdr2003/indicator/indic_99_1_1.html>

have access to it, and 88% of those connect from developed countries.¹³ It is thought that by September 2002 there were 605 million people online, of which only 6.31 million came from Africa.¹⁴ OECD countries average 332 users per thousand people, and high-income OECD countries average 400 users per 1000. In contrast, developing countries average only 26.5 internet users per 1000, while least developed countries average only 1.8 users.¹⁵

It is important to keep in mind that figures may be deceiving. It has been calculated that by 2005 China will have more internet users than the United States,¹⁶ but this may simply be caused by the sheer volume of inhabitants. Looking at percentages the figures are still disheartening, with China having only 25.7/1000 people connected to the internet.

1.2. The causes behind the digital divide

What causes the digital divide? An initial analysis of some of the statistics presented in the first section would seem to indicate that there is a strong link between economic wealth and internet access within a population. It was pointed out that high-income OECD countries had the highest percentages of internet access, and that the poorest countries showed much lower access.¹⁷ This trend would seem to be corroborated by looking into the performance of some individual countries. The United States has a GDP per capita of \$35,277 USD, with internet access of 501.5 people per 1000 inhabitants. On the other side of the equation, the Democratic Republic of Congo has only a GDP per capita of \$99 USD – one of the lowest in the world – and the internet access is the lowest in the world, with only 0.1 persons per 1000 inhabitants being able to access the global network.¹⁸ These figures are consistent with the hypothesis that internet access is directly proportional to the country's wealth. However, this analysis

¹³ Black, op cit.

¹⁴ NUA Online. *How Many Online?* @: <http://www.nua.ie/surveys/how_many_online/index.html>

¹⁵ UNDP. *Human Development Indicators 2003: Internet users (per 1,000 people)*. 2003. @: <http://www.undp.org/hdr2003/indicator/indic_103_1_1.html>

¹⁶ Socialist International. "Bridge across the Digital Divide: The Role of Education in the 21st Century", *Meeting of the SI Committee on the Economy, Social Cohesion and the Environment*, Mexico City, 1-2 October 2001. @:

<<http://www.socialistinternational.org/6Meetings/SIMEETINGS/Economy/Oct01/mexico-oct01-e.html>>

¹⁷ See supra note 11.

¹⁸ UNDP. *Human Development Indicators 2003: GDP per capita (US\$)*. 2003. @: <http://www.undp.org/hdr2003/indicator/indic_111_1_1.html>

may prove to be superficial, as a deeper look at the figures yields some interesting surprises.

Iceland for example is the country with the leading figures in internet access for 2003, with a staggering 599.3 people online per 1000 inhabitants, but has a lower GDP (at \$27,312 USD per capita) than other countries with lower internet access figures. The country with the highest GDP per capita for 2003 is Luxembourg (with \$42,041 USD), but has only moderate internet access figures (359.8/1000 people). Another discordant statistic is that of three countries that have similar GDP figures per capita are Estonia, Chile, and Costa Rica, all averaging around \$4,000 USD in the year 2003.¹⁹ However, Estonia has internet access figures of 300.5/1000 people, Chile has 201.4/1000 and Costa Rica only has 93.4/1000. At the lower end there are other discrepancies. Kenya and Gambia have very low GDP per capita figures, with \$371 and \$291 respectively. However, their internet access figures are much higher than most of other LDCs – 16/1000 and 13.5/1000 respectively – and considerably much higher than other countries within the same GDP per capita bracket, such as Nigeria.

Something else must be at work here. A recent study about internet access in Central American countries may help to elucidate the reasons for the inconsistencies described above.²⁰ The study calculated differences in cost for an average family to connect to the internet, taking into account the cost of a telephone call and any additional charges for internet connections provided by local companies. When the costs were calculated for a monthly access averaging 30 hours per week, including phone calls, some interesting facts emerge (See Table 1). The two countries with the highest access figures are Costa Rica and Panama, with both presenting very similar average connection costs. However, cheaper connection rates do not seem to translate immediately into higher access, as the cases of Guatemala and Honduras indicate. It would seem logical to assume then that if the cost of connecting to the web is higher in a country, only the wealthiest inhabitants would be able to go online. But when one contrast the figures of access, cost and the number of telephone mainlines, a clearer picture begins to emerge.

¹⁹ Ibid.

²⁰ Martínez, J. *Los costos de la Internet: ¿estímulo o desestímulo para su desarrollo en América Central?* Fundación Acceso, Julio 2000. @: <<http://www.acceso.or.cr/publica/telecom/REFL3-pppp.shtml>>

TABLE 1

Country	Access per 1000 people (HDR 2003)	Average cost of connection (per month/30 hours) USD	Telephone mainlines per 1000 people (HDR 2003)
Costa Rica	93.4	\$58	230
Panama	41.4	\$56	130
El Salvador	23.4	\$94	102
Guatemala	17.1	\$43.5	65
Nicaragua	14.4	\$92	29
Honduras	13.8	\$50.5	47

Table 1 shows that there is a strong correlation between the number of telephone mainlines and online connection figures. This indicates that cost is not the only determining factor, as evidenced by the inconsistencies shown in this table and in GDP figures. It appears that there must also be an existing infrastructure otherwise people will not be able to connect. Further evidence can be found in the three countries with similar GDP per capita figures mentioned above: Estonia, Chile, and Costa Rica. Estonia has very high telephone per capita figures (354/1000), which translate into high internet connection ratings (300.5/1000).²¹ However, Chile and Costa Rica have very similar telephone mainlines per capita (230/1000 and 233/1000 respectively), yet as previously mentioned, Chile has much better internet connection rates than Costa Rica. The difference may be explained by costs, as a flat-rate internet connection in Chile can cost as low as \$21.²² Cost and income figures are therefore important in calculating the reasons for the digital divide, but actual access to the infrastructure seems to be the vital factor in the ultimate figures.

Another factor to consider is that access to the telecommunications network will only be possible with computers. The statistics mentioned will be useless if the country does not have computers to connect to the network, and software is required to run the computers. Norris recognises this when she lists several other determining factors in

²¹ UNDP. *Human Development Indicators 2003: Telephone mainlines (per 1,000 people)*; op cit.

²² Figures taken from Terra, one of the most popular Chilean ISPs. @: <<http://www.terra.cl/>>

the existence of the digital divide, transcending the mere economic analysis of GDP per capita distribution. She lists cost of software and hardware, connection costs, and research and development as some of the other reasons that explain the digital divide,²³ but fails to establish the obvious correlation between telephone lines and internet access exposed above.

2. Ghost machines: hardware and the divide

If there is ever going to be an effort to solve the digital divide, then the access to computer hardware would have to be at the top of the list, and it would initially seem like the most difficult area to solve, but it may actually be one of the easiest problems to start tackling. The high cost of hardware is one of the main problems affecting the development of information technology in the developing world, but trends in hardware prices demonstrate that the technology is becoming more accessible every year, with hardware prices continuing to fall. Although a study in 1995 showed that Personal Computer (PC) prices had remained at around \$1000 USD for entry-level computers during the first half of the decade despite the drop in costs, this was attributed to hardware and software improvements for each model.²⁴ Nevertheless, studies charting the price of PC during a longer period of time have demonstrated a continuous decrease in price over time, particularly accelerated at the end of the 1990s.²⁵ However, top-level computers still cost around \$500 USD per unit.

The solution to this problem could lie in the use of charities to provide old hardware from the developed countries and donate it towards less developed ones. It is calculated that each year in the United Kingdom alone, 1.5 million computers are thrown as garbage, and an equivalent amount are kept in storage unused.²⁶ In the United States, 2 million computers are thrown out each month.²⁷ Something that could be done in this respect is to have projects that transfer some of this old equipment to poor countries. Another solution for the hardware cost could be to involve socially-

²³ Norris, op cit; pp.56-57.

²⁴ Andreson, A; Bikson, T; et al. *Universal Access to E-mail: Feasibility and Societal Implications*, Santa Monica CA: Rand, 1995, pp.54-56.

²⁵ Berndt, E.R; Dulberger, E.R. and Rappaport, N.J. "Personal Computer Prices for Laptops and Desktops: A Quarter Century of History", *Price, Output and Productivity Measurement Workshop*, National Bureau of Economics Summer Institute, 2000. @: <<http://www.nber.org/~confer/2000/si2000/berndt.pdf>>

²⁶ For similar statistics, see: Computer Aid International. @ <<http://www.computer-aid.org>>

²⁷ Aguilar, R. "Where old computers go to live", *CNET News.com*, December 29, 1998. @ <<http://news.com.com/2100-1040-219552.html?legacy=cnet>>

minded private industries. Large industries like Microsoft, Sun Microsystems and IBM have already committed funds to provide some computing services for developing countries, including hardware and open source office application software.²⁸ Small computer donations could go a long way in establishing information hubs and provide wider access to the web.

2.1 Telecommunications infrastructure

The figures presented seem to indicate that the improvement of telecommunications infrastructure must be a priority for those developing countries that wish to increase their internet access rates. This strategy must run in two separate streams; one is to ensure that the international connections are in place and are suitable for internet transactions, and the second is to improve national telecommunications infrastructure.

There is already an international internet backbone, but the way in which it is configured may prove to pose yet more difficulties for developing countries. The reason for this is that the internet backbone is extremely US-centric – this means that most of the internet traffic passes at some stage through the United States, even if the exchanging countries are close to each other. Cukier cites the example of Singapore and Malaysia, two neighbouring countries that send more than 10 times the amount of internet traffic to the United States than to each other.²⁹ Another example of the inefficient infrastructure is Africa, where every country – with the exception of South Africa – needs to connect to the internet using an industrialised nation.³⁰ This status-quo inefficiently increases prices for developing countries because they must lease bandwidth in foreign servers, increasing their costs.

One of the solutions to this problem would be to increase local networks so as to overcome the reliance on developed nations, and in particular on the United States. One way to do this would be for governments to provide tax-credits for telecommunications companies that would decrease internet costs.³¹ It must also be noted that although international connection prices remain high, they are constantly

²⁸ Sun Microsystems. “Sun counters educational digital divide”, Sun Microsystems press release, 2002. @: <<http://za.sun.com/news/press/2002/020708.html>>

²⁹ Cukier, K. N. “*Bandwidth Colonialism? The Implications of Internet Infrastructure on International E-Commerce*”, INET99 Conference, San Jose California, June 1999. @: <http://www.isoc.org/inet99/proceedings/1e/1e_2.htm>

³⁰ Ibid.

³¹ Ibid.

decreasing. An example of this is the AC-1 transatlantic cable installed in 1998, which decreased prices across the board. According to Kelly, the price of this cable for an ISP “is just over US\$ 300 per 64 kbit/s circuit per year, whereas the TAT-8 cable, completed a decade earlier, cost more than US\$10,000 per circuit per year.”³²

Although the architecture still shows problems, it must be said that the network is continuing to grow to provide for more efficient routes between countries, generating increasing traffic between large cities in nations around the world. In fact, Townsend comments that the global efficiency of the network is being improved in places like Europe and Asia, serving as new hubs of internet bandwidth transport for other countries.³³ Looking back at the history of the development of the World Wide Web, there should be no doubt that the process of international interconnections will continue to develop as time goes by, something that will undoubtedly benefit developing countries.

The national telecommunications infrastructure is a more difficult problem to tackle. It has been suggested in earlier sections that internet connection rates are largely dependent on the existence of an adequate phone network system in the country in question. The problem is that the cost of wiring a country to provide improvements in connection rates is considerable. It is difficult to determine the cost of every new line in a developing country because calculations must take into consideration the fact that most of the technology must usually be imported. Even conservative estimates put the cost of each new telephone line at around \$1000 USD in areas that do not possess any wiring.³⁴

However, the lack of existing copper telephone lines may prove to be an advantage because developing countries may be more likely to use other technologies to connect to the internet instead of relying on existing and outdated telephone networks. The obvious solution would be to take advantage of the rapid growth in the quality of wireless networks and forego the physical wire telecommunications route in favour of

³² Kelly, T. *Internet peering: What does it mean for developing countries?* Discussion paper for the International Telecommunications Union, 1998. @: <<http://www.itu.int/ITU-D/ict/papers/peering/Peering-article.doc>>

³³ Townsend, A. “Network Cities and the Global Structure of the Internet”, *American Behavioral Scientist*, 44(10), February 2001.

³⁴ Sata, R. “Accelerating the Internet Revolution in Developing Nations”, *Commsphere 2000 Conference*, Indian Institute of Technology, Madras, 2000. @: <<http://www.tenet.res.in/commsphere/s8.2.pdf>>

adopting wireless communication as the route to increase connectivity. The 2002 World Telecommunication Development Report points out that wireless is the most efficient way to increase telecoms connection figures in countries with minimal advances. The report makes the case of Uganda as a least developed country where the mobile route has increased rates. It points out that “*Uganda’s overall telephone density quadrupled between 1998 and 2001, rising from 0.41 telephone subscribers per 100 people to 1.72. [...] Over 50 per cent of the population is now covered by mobile cellular and some 80 towns have service.*”³⁵ This trend towards the reliance on mobile and wireless technologies is repeated in many other sources.³⁶

Setting up a working internet wireless network is much cheaper than wiring up a remote community using traditional connections, thus providing a potential solution to internet connection problems. Estimates for the cost of setting up an entire rural wireless network have been calculated at under \$450 USD per hub;³⁷ but with decreasing prices and the capability of wireless hardware increasing every day, this cost may be much smaller. The costs may still be considerable, but the advantage of this approach is that it can be implemented almost immediately, without having to wait for an entire rural telephony wiring programme to get underway.

There are different wireless technologies that can be used to achieve fast internet connections in remote locations. Some of these are actually being deployed in developed countries to provide broadband internet access in locations where it is otherwise not economically feasible.³⁸ The way to go appears to be the creation of public wireless access networks run by small foundations or volunteers. These networks create a “wireless commons”, a network that everybody in town can access.³⁹

The two most viable technologies for fast deployment are via satellite or by creating line-of-sight wireless networks. Each of these solutions offers different advantages and problems, and they may be adopted to fit different situations. Satellite communication

³⁵ International Telecommunications Union. *World Telecommunication Development Report 2002*. @: <http://www.itu.int/ITU-D/ict/publications/wtdr_02/material/WTDR02-Sum_E.pdf>

³⁶ For example, see: Sciadas, op cit, p.19.

³⁷ Jhunjhunwala, A; Ramamurthy, B; and Gonsalves T. “The Role of Technology in Telecom Expansion in India”, *IEEE Communication Magazine*, November 1998.

³⁸ Rubens, P. “Fast track to the shires”, *Guardian Online*, July 31, 2003. @: <<http://www.guardian.co.uk/online/story/0,3605,1008879,00.html>>

³⁹ An example of this is the town of Leiden in the Netherlands. For more details about this project, go to: <<http://www.wirelessleiden.nl/english/index.shtml>>

would be preferable in very remote areas with smaller connection requirements, and could be used for remote clinics, hospitals or small education centres where only one or two computers will be online. This is more expensive, but prices are steadily on the decrease. Wi-fi⁴⁰ local area networks can provide much larger numbers of connections to computers with wireless network capabilities.

The wireless route can also be used successfully in education centres as a community solution. The establishment of low-cost public access wireless internet centres would enable the provision of services to larger numbers of people for educational purposes. The first stage of the process would be to obtain hardware for this purpose. A study by the Pan African Development Information System places the cost of each internet-ready system in Africa at about \$800 USD.⁴¹ That expense coupled with the already mentioned cost of setting up a wireless network would amount to expenses of just over \$1000 USD for a small centre connected to the internet, making sure that a community stays connected to the web.

A successful case study of wireless connectivity for education is that of Bangladesh, where there are only two phones per 1000 people, with virtually no traditional telephone lines in rural areas, connection fees in excess of \$500 USD, and waiting list of 5-10 years.⁴² Recently, wireless technology has been used to connect agriculture students to the capital, located 100 km away, something that would not be possible without wireless connections.⁴³ There are similar examples in Nepal, where farmers in remote regions of this country are using wireless internet connections to access the internet.⁴⁴

This solution would be the first step in a wider strategy designed to create training hubs where targeted international assistance could have a much bigger effect. This would possibly open high-speed connections and technical training in colleges and universities, attempting to create a small foothold to provide access to people online. A

⁴⁰ Short for "Wireless Fidelity", a set of wireless communication standards.

⁴¹ Adam, L. "Africa on the line?" *Ceres: The FAO Review*, No. 158 - March-April 1996.

⁴² Qadir, I. "Wireless Internet and Development", *Wireless Internet Opportunity for Developing Nations Conference*, UN Headquarters, New York. @:

<http://www.w2i.org/pages/wificonf0603/speaker_presentations/W2i_Qadir_Presentation.pdf>

⁴³ Hermida, A. "Wireless net strides Bangladesh", *BBC News*, October 6 2002. @:

<<http://news.bbc.co.uk/1/hi/technology/2303431.stm>>

⁴⁴ "Wi-fi lifeline for Nepal's farmers", *BBC News*, May 25 2004. @:

<<http://news.bbc.co.uk/1/hi/technology/3744075.stm>>

meeting of experts in Mexico in 2001 suggested that “*International co-operation has in some cases to be rethought: more attention has to be paid to the creation of high-quality training and apprenticeship. Elite institutions such as universities and scientific training facilities have to be valued for their vital role in the process of development.*”⁴⁵

Nevertheless, even if remote and deprived communities are able to connect to the web with wireless networks and donated equipment, there are still serious problems that need to be addressed. The first one would be sustainability; each of these centres would have to be able to sustain itself after international help has dried up and even if the local political will directs priorities away from ITC connectivity. This is an unresolved question that must remain open for the time being. It is easy to imagine centres opening up all over developing countries that will eventually have to shut down because of lack of funds. If these centres eventually start charging for their services it is possible that the amount of money generated would not be enough to provide enough funds to maintain the centre. Charging for services would also defeat the ethos that must prevail at the start of the bridging of the digital divide. This is a serious consideration that governments, aid agencies, and NGOs involved in solving the digital divide must keep in mind.

The other serious problem that has to be taken into consideration is the issue of content and software, which are questions that are considerably linked to copyright, and will be dealt with in the next section.

3. Beyond access: Content and ownership

The problems of access to the internet that have been explored so far have dealt primarily with hardware and connectivity to telecommunications networks. The issue of copyright starts becoming more relevant when we move from the realm of telecommunications to the problem of content. Even if the problem of access to the internet was miraculously solved tomorrow and large sectors of the world’s population were able to get online, some questions would still remain. What awaits the people of the developing world once they connect to the internet? Is the content relevant to their needs? Who owns the content? And most importantly, will they be able to understand any of it?

⁴⁵ Socialist International; op cit.

The first problem for developing countries is one of literacy; one fifth of the world's population remains illiterate. Considerable numbers of the populations of the developing world remain immersed in illiteracy, with figures for 2003 standing at an average of 74.5% of the population being able to read and write. The figure for least developed countries is 53.3%,⁴⁶ which means that even if the people in these countries could access the internet, almost half of them could not understand what is on the screen.

The problem of content is made worse by the predominance of English as the language of choice for content online. A survey by the research firm eMarketer found that out of 313 billion pages searched, 68.4 of them were in English.⁴⁷ It must be said that these figures are better than those for 2000, where search engine Inktomi found that 86.55% of one billion indexable documents were written in English.⁴⁸ This should take into consideration that only one tenth of the world has English as its native language⁴⁹ and that about a quarter of the world's population speaks it either as a native or a second language.⁵⁰ Figures for 2003 indicate that only 35.2% of the internet population are native English speakers. At the same time Chinese, Japanese, German and Spanish native speakers make up a combined 36.8% of the internet population.⁵¹ This must necessarily mean that many people are forced to surf the internet in English, as the majority of the content is found in that language, even though 43% of web users do not speak English at all.⁵² The implications are severe for the future of a diverse internet full of content that can be understood by people in developing countries. Therefore, any solution to the digital divide must take into consideration the problem of content.

The other problem faced by people in developing countries is one of ownership of online materials. In the early days of the internet, free access to information was the norm, with great numbers of materials provided online free of charge, or only requiring

⁴⁶ UNDP. *Human Development Indicators 2003: Adult literacy rate (% age 15 and above)*. 2003. @: <http://www.undp.org/hdr2003/indicator/indic_89_1_1.html>

⁴⁷ As cited by: Global Reach. *Global Internet Statistics: Sources & References*, March 2003. @: <<http://global-reach.biz/globstats/refs.php3>>

⁴⁸ Inktomi. *Inktomi WebMap*, January 18, 2000. @: <<http://web.archive.org/web/20011018122217/www.inktomi.com/webmap/>>

⁴⁹ Wallraff, B. "What Global Language?" *The Atlantic*, November 2000. @: <<http://www.theatlantic.com/issues/2000/11/wallraff.htm>>

⁵⁰ Anthony, T. "English: 1 Tongue for the New Global Village", *Associated Press Wire*, April 2000. @: <<http://wire.ap.org/APpackages/english/english1.html>>

⁵¹ Global Reach; op cit.

⁵² Ibid.

registration to access content. But there is a growing trend by content providers to request subscription fees to be able to access online materials in content-rich environments, such as online encyclopaedias, dictionaries, specialised magazines, journals, research reports and databases. In fact, research by the Online Publishers Association (OPA) in the US estimated that “*by the end of 2002, one in ten online users in the U.S. were regularly paying for some form of content, and total content sales for the year reached \$1.3 billion dollars.*”⁵³ The same report estimates that the trend of providing paid content will continue to grow as the market gears itself to give rich content to niche industries that can afford to purchase increasingly expensive subscription fees.⁵⁴ Content rich sites like the Encyclopaedia Britannica or Oxford University Press (OUP) are already offering a significant amount of online materials at subscription costs. OUP for example offers materials with annual subscription fees of approximately \$250 USD for schools, and between \$395 to \$3,000 USD for multiple-user accounts.⁵⁵

The end result of this trend towards privatisation of content is that the web might become a two-tier environment, with high-content sites locked away by subscription fees, while the public web contains less valuable information – a negative scenario for those who see the internet as the natural repository of human knowledge. There cannot be any doubt that companies that provide services will have a valid interest in recuperating their investment by selling their content, but the result of this may be to increase the digital divide. Another result of this would be related to the language barriers expressed above; it is natural that content providers would be interested in offering their services only in English because the US market is the one with the purchasing power, while there would be no interest in providing content in other languages because other countries are unable to pay for the content.

The problem of ownership of content is made more severe by the existence of infogopolies, a term used by Drahos and Braithwaite to describe the emergence of small clusters of companies that own vast amounts of copyright works in the areas of

⁵³ Online Publishers Association. *Online Paid Content: U.S. Market Spending Report*, March 2003. @: <http://www.online-publishers.org/opa_paid_content_report_030403.pdf>

⁵⁴ Ibid.

⁵⁵ Mayfield, K. “Oxford Online: Will People Pay?” *Wired News*, March 28, 2002. @: <<http://www.wired.com/news/business/0,1367,51300,00.html>>

publishing, software, music and film.⁵⁶ These infogopolies have a vested interest in making sure that as much content online as possible will be protected by copyright, hence providing that information under licences to consumers for economic gains. The problem with infogopolies is that they are increasingly pushing towards more international protection and more stringent enforcement of owner's copyright.

An area where the excessive stranglehold of the owners can be felt to have detrimental effects is in education. It is evident that education is of particular importance to poor countries, and information technology can be an important vehicle for improving education standards in the developing world, and its potential value cannot be neglected. Talking about information technology and education, Mitchel Resnick, from the influential Media Laboratory at MIT, says that *"These new technologies have the potential to fundamentally transform how and what people learn throughout their lives. Just as advances in biotechnologies made possible the "green revolution" in agriculture, new digital technologies make possible a "learning revolution" in education."*⁵⁷

The problem of implementing technological aids to education in the developing world is that it is expensive to do so, and this is where intellectual property can play an extended role, because it may increase the costs to purchase content and education materials. The existing system allows for some exceptions in education related subjects. For example, existing copyright protection allows for some limited copying of works for educational purposes such as can be expressed in Article 9(2) of the Berne Convention, which allows signatory countries to pass exceptions to copying in certain instances where the public interest is involved.⁵⁸ At some point, there were discussions to allow poor countries to have more rights. For example, during the Revision Conference to the Berne Convention held at Stockholm in 1967, a proposal was made to give developing countries the possibility of enacting exceptions to international agreements in education related works, such as translations, and other exceptions relating to works of scientific, research or educational interest. Unfortunately this

⁵⁶ Drahos, P; Braithwaite, J. *Information Feudalism: Who owns the Knowledge Economy?* London: Earthscan Publications, 2002, pp.169-186.

⁵⁷ Resnick, M. "Rethinking Learning in the Digital Age" *The Global Information Technology Report 2001-2002: Readiness for the Networked World*, Kirkman, G. S. ed; Oxford: Oxford University Press, 2002, p.32.

⁵⁸ An example of such legislation can be found in UK legislation, CDPA, s36.

proposal was not ratified, and it was only implemented in a weaker version in a different meeting which took place in Paris during 1971.⁵⁹

Nevertheless, despite these efforts the access to knowledge still is a problem. A study by the UK's Commission on Intellectual Property Rights (CIPR) serves as one of the most worrying reports on access to technology in education. The CIPR states that several consultations within developing countries have shown serious problems of access to software, textbooks, and specialised technical material. The Report explains:

*The arrival of the digital era provides great opportunities for developing countries in accessing information and knowledge. The development of digital libraries and archives, Internet-based distance learning programmes, and the ability of scientists and researchers to access sophisticated on-line computer databases of technical information in real time are just some examples. But the arrival of the digital era also poses some new and serious threats for access and dissemination of knowledge. In particular, there is a real risk that the potential of the Internet in the developing world will be lost as rights owners use technology to prevent public access through pay-to-view systems.*⁶⁰

This is where the question of content becomes relevant for the digital divide. Will the inhabitants of the developing countries be able to use the internet to its fullest potential or will they find a web filled with subscription content in languages they cannot understand? Part of the strategy in each country must be to look towards developing content as well, perhaps even involving the communities in that same purpose. This would have the added bonus that access to the internet would not be a passive endeavour; the members of the newly connected communities would become contributors of content as well, furthering the diversity of the internet.

One excellent example of a carefully considered strategy that attempts to solve the digital divide in the educational system through collaboration between the government, NGOs, and local communities, is that of Programa Huascan in Peru.⁶¹ This is an ambitious project that attempts to connect all public education centres in Peru to the online environment. The project also provides a wide-ranging online solution for the

⁵⁹ Ricketson, S. *The Berne Convention for the Protection of Literary and Artistic Works: 1886-1986*, London: Kluwer, 1987, Chapter 11.

⁶⁰ Commission on Intellectual Property Rights. *Integrating Intellectual Property Rights and Development Policy*. Report of the Commission on Intellectual Property Rights, London: CIPR, September 2002, p.100.

⁶¹ The website for the project can be found here: <<http://www.huascan.gob.pe>>

Peruvian education system by the incorporation of different strategies such as course management, access to a national student, and staff registration database that can be updated directly by the teachers. It also provides different types of content to use in classes. What makes this project unique is that it provides tools not only in Spanish, but also an online dictionary in various indigenous languages such as Cuzco and Aymara. The project also has been attempting to connect remote communities by the use of satellite connections, which have been donated by NGOs and foreign governments. Although the project is in its early stages, this approach seems like a worthwhile effort to solve some of the most pressing issues about online access in least developed nations.

4. Redressing the divide: A new sharing ethos

The evidence presented so far seems to indicate two very interesting trends. The situation regarding hardware, connectivity and telecommunications networks seems to be getting better with the advent of wireless technologies and decreasing prices. On the other hand, access to materials online is an increasing problem for developing countries. However, the picture is not as negative as it seems. There are other trends with regards to internet materials that challenge the traditional trends of ownership of content. There is increasing evidence that there is a growing number of people and organisations that are empowering the sharing of information as a powerful ethical reply to the often selfish and individualistic trends towards more protection.

The internet is the perfect experimental ground for some of these sharing ideas. The sharing of one's works – and in many cases the works of others – has become routine in cyberspace. People create and innovate in a digital environment in which ideas pass through the network without leaving a trace, crossing borders without passports, providing the perfect environment in which the ownership of ideas is no longer relevant. As expressed by Nicholas Negroponte, the famous Internet guru, *"In a digital world, the bits are endlessly copyable, infinitely malleable, and they never go out of print. Millions of people can simultaneously read any digital document - and they can also steal it."*⁶²

⁶² Negroponte, N. "A Bill of Writes", *Wired* 3.05, May 1995. @:
<<http://nicholas.www.media.mit.edu/people/nicholas/Wired/WIRED3-05.html>>

Barlow, for example, points out that the digital environment has created a new paradigm for intellectual property. He notes that:

*The riddle is this: if our property can be infinitely reproduced and instantaneously distributed all over the planet without cost, without our knowledge, without its even leaving our possession, how can we protect it? How are we going to get paid for the work we do with our minds? And, if we can't get paid, what will assure the continued creation and distribution of such work?*⁶³

The answer to this question is the sharing of information. Sharing is being used on the internet as the currency of that borderless country known as cyberspace. The fact that people continue to post content online has to constitute hard evidence against some of the classic mantras expressed in the utilitarian justification for intellectual property. Sharing has its advantages. In the online environment where electronic bits can be exchanged almost simultaneously, sharing is the obvious result. If users want to obtain something, they learn quite quickly to share their own works as well. Internet activists Mark Surman and Darren Wershler-Henry explain the sharing synergy exhibited online by commenting that “*In a digital environment, sharing [...] costs you nothing and earns you a great deal: respect, feedback and good turns in kind.*”⁶⁴

This sharing ethic is born from the strong sense of community taking shape on the internet. People from around the world realise that they can find anything on the internet for free, and develop a sense that you also have to provide the community with information, following from that premise. Mowbray and Bays use the cookie analogy to explain this phenomenon. They notice that there is a gift philosophy taking shape on the internet, arguing that “*Individual Internet users donate content for other Internet users to use free of charge. In return, each individual receives access to all the content made available by others. The amount an individual receives is much more than they could ever produce, so the gift economy works in the interest of Internet users.*”⁶⁵ This gift economy works as a cookie recipe for sharing, where a community is encouraged to share their own cookie recipes to the wider audience.

⁶³ Barlow, J. P. “Selling Wine Without Bottles: The Economy of Mind on the Global Net”, *Wired*, 2.03, March 1994. @: <<http://www.wired.com/wired/archive/2.03/economy.ideas.html>>

⁶⁴ Surman, M. and Wershler-Henry, D. *CommonSpace*, Ontario: Financial Times Prentice Hall, 2001, p.109.

⁶⁵ Bays H. and Mowbray M. (1999) “Cookies, Gift-Giving, and the Internet”, *First Monday*, Vol. 4 No. 11, November 1999. @: <http://firstmonday.org/issues/issue4_11/bays/index.html>

One of the fields in which this type of ethic is more evident is in the hacker movement. Hacker philosophy rests on the premise that the internet is a free medium that cannot be regulated. In this scheme of things, the general feeling in hacker circles is that the internet has no laws, but hackers achieve a sense of community in which sharing of information becomes essential. In fact, the first rule of hacker ethics actually states that *“information-sharing is a powerful positive good, and that it is an ethical duty of hackers to share their expertise by writing free software and facilitating access to information and to computing resources wherever possible.”*⁶⁶ Anthropologist Steve Mizrach analysed several hacker texts and came up with a set of common ethical practices that could be seen throughout the computer underground community. Among those was the elevation of sharing as an ethical hacker imperative and the expression that information is alive and wants to be free. The use of the word “free” has three related aspects: freedom of movement of information, freedom from control, and free of cost. This is exemplified by one of the hacker maxims: *“Information increases in value by sharing it with other people. Data can be the basis for someone else's learning; software can be improved collectively.”*⁶⁷

These ideas of sharing as powerful creative tools are simply the logical extension of the memetic theory discussed earlier. Powerful ideas will reproduce online, and the internet acts like a giant cultivation dish for information. Doing so, ideas will be reviewed by the largest audience in history, exchanging better solutions, constantly evolving and creating better content. The review is done by clicks instead of words, with links instead of journals. The sharing revolution is being spearheaded by this sense of freedom. Anybody can be an editor on the internet; anybody can post their stories, music, novels, paintings, holiday photographs, crude animations, bad jokes, and recipes online. There is no censor, nobody to say that your work is not good enough for publication, the community is the ultimate reviewer. Technology commentator Michael Lewis expresses this by stating that:

⁶⁶ “Hacker Ethics”, *The Hacker's Dictionary*. @: < <http://www.hack.gr/jargon/html/H/hacker-ethic.html> >

⁶⁷ Mizrach, S. *Is there a Hacker Ethic for 90s Hackers?* 1997. @: <<http://www.attrition.org/%7Emodify/texts/ethics/is.there.a.hacker.ethic.for.90s.hackers.html>>

Technology has put afterburners on the egalitarian notion that anyone-can-do-anything —especially in fields in which “expertise” had always been a dubious proposition. Amateur book critics published their reviews on Amazon; amateur filmmakers posted their works directly onto the Internet; amateur journalists scooped the world’s most powerful newspapers⁶⁸

A more detailed analysis of the new sharing economy on the internet can be found in the interesting book by Swedish Internet experts Alexander Bard and Jan Söderqvist called *Netocracy*.⁶⁹ In this work, they explain that the traditional capitalist economy does not fare well in the digital domain. Their argument is that the old aristocratic elites are being replaced by a netocracy, a technophile and cosmopolitan class of individuals who have turned cyberspace into their own country, with the defining characteristic that they are more concerned with information than with property or the production of tangible goods.⁷⁰ In the new netocracy, intellectual property has little space. They comment that:

...since the central value of the informational economy does not lie in the information itself, but in the sorting and combination of information, the most powerful netocrats need not concern themselves with ownership of copyrights and patents [...] The ability to network and gain an overview of large amounts of information that is sought by everyone cannot be copied or stolen; the owner is threatened by nothing but the possibility that someone will prove themselves more talented.⁷¹

It would appear that the cybernetic experiment has certainly eroded some of the justifications for intellectual property by proving that people are willing to create without hope of remuneration, and caring little for the strength of protection awarded by laws that protect intellectual creations. The exchange and unlimited flow of information in the digital economy has become the ultimate goal.

Another interesting result of this new medium for the sharing of ideas is that developing countries may also start to try to obtain access to technology by means of the internet. This of course, will presuppose that the access problem itself may be solved with new and cheaper technologies.

⁶⁸ Lewis, *The future just happened*, op cit; p.91.

⁶⁹ Bard, A. and Söderqvist, J. *Netocracy*, London: Pearson Education, 2002.

⁷⁰ Ibid; p.126-135.

⁷¹ Ibid; p.254-255.

5. Open Access: Expressing the sharing ethic

There is another field where the sharing ethos can be felt in its widest form, and that is in the realm of software development. Software is a very profitable business, and the software industry is one of the most powerful and influential infogopolies in the world. Keeping in mind the tremendous interest of the software industry in maintaining and enhancing intellectual property protection of their works, it must come as a surprise that perhaps the largest theoretical revolution against the traditional justifications behind intellectual property has taken place in the midst of the software industry. This revolution is the emergence of the software development methods called open source software and free software, also known as Free and Open Source Software (FOSS). In its more general form, FOSS is simply defined as software which is released through a permissive licence that allows later modifications to the source code⁷² by the user or by other developers – modifications that are possible by allowing others to access the source code. There is extensive recent literature in the subject of open source licensing,⁷³ but there has been less emphasis on the progression and evolution of the model from a mere software development and into the open access movement, which is mostly concerned with content.

5.1 The open access definition

Open access is a term that has become prevalent in previous years as a direct descendant of the FOSS licensing model. Open access is mostly being used to identify works that are freely available over the internet.⁷⁴ These works will generally be distributed by maintaining their copyright – although the term should be generic enough to define works that have been released into the public domain. Open access then will be any work that has been offered under a permissive licence that allows the redistribution of the work. In recent years, open access has gained some specific

⁷² Source code is the programming statements in a programming language that exists before the programme is compiled into an executable application. The executable form of the software is generally known as the object code, and can only be read by the machine. It is also known as the binary code.

⁷³ For example, see: O'Sullivan, M. "Making Copyright Ambidextrous: An Expose of Copyleft", *Journal of Information, Law and Technology*, 2002 (3). @ <<http://elj.warwick.ac.uk/jilt/02-3/osullivan.html>>; Pearson, H. E. "Open Source: The Death of Proprietary Systems?" *Computer Law & Security Report*, Vol. 16(3), 2000, pp.151-156; Guadamuz, A. "Viral contracts or unenforceable documents? Contractual validity of copyleft licenses", *European Intellectual Property Review*, Vol. 26(8), 2004, pp.331-339; Gomulkiewicz, R. "De-Bugging Open Source Software Licensing", *University of Pittsburgh Law Review*, Vol.64, 2002, p.75.

⁷⁴ Using free in the liberty or freedom sense of the word, not as in price.

connotations, and it is being used to refer to academic journals, particularly after the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities,⁷⁵ and the Budapest Open Access Initiative (BOAI).⁷⁶ Suber defines open access thus:

*“Open access” (OA) is free online access. OA literature is not only free of charge to everyone with an internet connection, but free of most copyright and licensing restrictions. OA literature is barrier-free literature produced by removing the price barriers and permission barriers that block access and limit usage of most conventionally published literature, whether in print or online.*⁷⁷

Nevertheless, the term open access is not devoid of problems. Firstly, if the term is now being identified as an expression to define subscription-free academic journals, and there is a high probability that its use may be limited to that field. This would necessitate the creation of further definitions to use in other areas of intellectual creation, such as software, biotechnology, medicines or other creative arts. Secondly, the term open access is already used for such diverse range of subjects such as freedom of information, competition law and digital divide subjects,⁷⁸ which may create needless confusion of terms and definitions. Thirdly, there are substantial numbers of hardcore free software activists that resent the use of the word open, preferring the definitions and philosophies exemplified by the free software movement.⁷⁹ Using “open access” will probably serve to further alienate those who dislike its use in software development.

Some other solutions could be found to bypass this conceptual quagmire, such as finding alternative names for the licensing movement. This is already being performed with the creation of specific licensing models and definitions for separate fields of endeavour. A good example of separate definitions can be seen in the Creative Commons (CC) project, which attempts to create “*intellectual property*

⁷⁵ Full text of the declaration can be found here: <<http://www.zim.mpg.de/openaccess-berlin/berlindeclaration.html>>

⁷⁶ More about the initiative in this site: <<http://www.soros.org/openaccess>>

⁷⁷ Suber, P. *Creating an Intellectual Commons through Open Access*, May 28, 2004. @: <<http://dlc.dlib.indiana.edu/archive/00001246/01/suberrev052804.pdf>>

⁷⁸ For example, see: Pirogato, M. “Open Access and the Essential Facilities Doctrine: Promoting Competition and Innovation”, *University of Chicago Legal Forum*, 2000, p.369; and Feld, H. “Whose Line is it Anyway? The First Amendment and Cable Open Access”, *CommLaw Conspectus*, Vol. 8, Winter 2000, p.23.

⁷⁹ Stallman, R. *Why “Free Software” is better than “Open Source”*, 1998. @: <<http://www.fsf.org/philosophy/free-software-for-freedom.html>>

conservancies”,⁸⁰ separating a block of human knowledge offered for the benefit of the public, but still protected by intellectual property licences. This would be analogous to nature conservation areas that exist for the wider social benefit, but have restrictions on certain uses. In the Creative Commons, the goal of intellectual property conservancies is achieved through the offering of a wide variety of licences to protect creative works.

Because Creative Commons licences are geared specifically towards creative works such as music, literature, photographs and paintings, a new concept has been designed to accommodate scientific research, such as biotechnology and medicines. This concept is the Science Commons, which has been created by the Creative Commons Project and will deal with other areas that are not covered at the moment by existing CC licences.⁸¹

Although the differentiation of concepts may be useful in the future, there is still need to identify the entire model with a generic term. This is needed because both Creative Commons and Science Commons are part of a wider movement that is compatible with the non-proprietary software model and the open access definition.

The author suggests that at present, the best definition is open access, but it will have to be reworked to identify more than just academic online journals, as it has been the practice up until now. The new definition will have to recognise that not all open access needs to be provided online, as it would be perfectly feasible to assume that there will be circumstances in which open access works could be offered through offline copies. Paraphrasing the earlier OA definition, open access will be any work that is offered to the public domain, or that maintains its intellectual property protection but is offered to the public through a permissive licence that allows the copying and redistribution of the work.

5.2 Open content

The earlier discussion in regarding the digital divide evidenced the need to address the issue of access to works via the internet not only from the perspective of access to the worldwide network, but stressed the importance of addressing the problem of lack of quality content once people find themselves navigating the web. This problem can be

⁸⁰ Creative Commons. *Legal Concepts*, 2003. @: <<http://creativecommons.org/learn/legal/>>

⁸¹ Creative Commons. *Science Commons*. @: <<http://creativecommons.org/projects/science/proposal>>

solved by the adoption of open access to content. This content includes literary works, educational materials, music, traditional knowledge and artistic works.

The largest repository of open content at the moment is the Creative Commons content directory, which lists all of the work that is being offered using one of the many CC licences available through the CC website. At the time of writing, the Creative Commons archive includes 2649 directories of works, of which 400 are audio, 41 movies, 362 images, 685 texts, 216 educational works and 178 technical materials.⁸² It is important to point out that most of these are collections, which means that the number of individual works should be much greater. The works licensed through Creative Commons licences attempt to use intellectual property to ensure public access to content. In their words:

*We use private rights to create public goods: creative works set free for certain uses. Like the free software and open-source movements, our ends are cooperative and community-minded, but our means are voluntary and libertarian. We work to offer creators a best-of-both-worlds way to protect their works while encouraging certain uses of them — to declare "some rights reserved."*⁸³

The Creative Commons idea has prompted the establishment of many other different projects that intend to offer open content to the public. The BBC has created the British Broadcasting Corporation Creative Archive (BBCCA),⁸⁴ which plans to place some of the BBC's professionally produced content online.⁸⁵ Importantly, the BBC has stated that the Archive "*will establish a pool of high-quality content which can be legally drawn on by collectors, enthusiasts, artists, musicians, students, teachers and many others, who can search and use this material non-commercially.*"⁸⁶ This seems to indicate that the BBC will be using some sort of open access licence, probably compatible with CC licences.⁸⁷

⁸² For a list of directories, see: <<http://commoncontent.org/>>

⁸³ Creative Commons. "*Some Rights Reserved*": *Building a Layer of Reasonable Copyright*. @: <<http://creativecommons.org/learn/aboutus/>>

⁸⁴ See: <<http://www.bbcmotiongallery.com/customer/index.jsp>>

⁸⁵ Dean, K. "BBC to Open Content Floodgates", *Wired News*, June 16, 2004. @: <<http://www.wired.com/news/culture/0,1284,63857,00.html>>

⁸⁶ BBC. *The Future of the BBC*, 2004. @: <<http://www.bbc.co.uk/thefuture/>>

⁸⁷ This has prompted some groups to lobby to ensure that the BBCCA will remain non-commercial. See: <<http://www.public-domain.org/?q=node/view/36>>

Education is another area that can benefit greatly from the open access ethos. Open Courseware⁸⁸ is a project by the Massachusetts Institute of Technology (MIT) that offers free educational course materials and free online courses online for a wide variety of subjects, ranging from Aeronautics to Writing. Open Courseware courses signal the willingness of a respected institution to provide their intellectual property openly for a worldwide audience. It must be pointed out that this project is offered using Creative Commons licences, enhancing the further distribution of the materials. This example of open access is of particular interest for developing countries, as there is a marked emphasis on technical subjects and the sciences, which may prove to be an invaluable source of content for cash-strapped educational institutions in developing countries. However, efforts must be made to make more of this content available in languages other than English.

Wikipedia⁸⁹ is another excellent project that generates freely available open content that can be distributed with some restrictions. Wikipedia is an online encyclopaedia that is written by the users in a method known as a wiki,⁹⁰ which is a collaborative effort where users can modify the content to ensure its novelty and usefulness. Although there are some problems with the accuracy of the content,⁹¹ one of the strengths of Wikipedia is that it is offered through a copyleft licence, which states that *“content can be copied, modified, and redistributed so long as the new version grants the same freedoms to others and acknowledges the authors of the Wikipedia article used”*.⁹²

Although the aforementioned efforts go a long way towards creating considerable open content, perhaps the greatest encouragement for open content is the promulgation of the open access journal movement as exemplified by the aforementioned Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities of October 2003. The Declaration is the end result of a three-day conference organised by the Max Planck Institute in Berlin in which experts from German and international institutions gathered to discuss the implications of using the internet as a medium to communicate

⁸⁸ See: <<http://ocw.mit.edu/index.html>>

⁸⁹ <http://en.wikipedia.org/wiki/Main_Page>

⁹⁰ Wiki is a Hawaiian word that means “quick”.

⁹¹ A problem that is recognised by Wikipedia itself. See: <http://en.wikipedia.org/wiki/Wikipedia:Why_Wikipedia_is_not_so_great>

⁹² Wikipedia. *Wikipedia: copyrights*. @: <<http://en.wikipedia.org/wiki/Wikipedia:Copyrights>>

research results and as the main publishing medium. The Declaration is not only directed towards educational and research institutions, but attempts to promote open access dissemination of cultural works by museums, libraries and archives. What makes the declaration unique is the fact that the definition of materials that should be disseminated through open access should meet scientific requirements. The Declaration states that “*We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community.*” This requisite sets the definition of open access managed by the Declaration apart from other open access projects, such as Wikipedia or the Creative Commons, as there appears to be a scientific peer-review prerequisite in the way in which the information is disseminated. This is because the internet contains too much information already, much of it garbage, a fact that may prompt users to rely on a few websites filled with low-quality or inaccurate content.⁹³ Peer-review would be the way to filter out the dross.

The Berlin Declaration is just the latest of a growing number of efforts to provide high-quality content open access journals, evidenced by the aforementioned Budapest Open Access Initiative, the Bethesda Statement on Open Access Publishing,⁹⁴ and also the European Cultural Heritage Online (ECHO) Charter.⁹⁵ The common denominator of these projects is the free access online to scholarly academic literature. The BOAI explains it thus:

By "open access" to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself.

There is a growing understanding that this model is the future of academic content. Studies indicate that journals that are available online have wider circulation and are more cited than more prestigious journals. A study of 119,924 conference articles in computer science found that the most cited articles were significantly most likely to

⁹³ Sunstein, C. *Republic.com*, Princeton, NJ: Princeton University Press, 2001.

⁹⁴ <<http://www.earlham.edu/~peters/fos/bethesda.htm>>

⁹⁵ <<http://www.ling.lu.se/projects/echo/contributors/charter.html>>

come from journals available online than from offline journals by an average 336%.⁹⁶ Another study in the United States has found that online journal publishing is economically sustainable under the present system because the revenue obtained by each published article from the publisher is equal to the cost of producing the article, which removes the economic recuperation justification. The study points out that “*The monetary cost of the time that scholars put into the journal business as editors and referees is about as large as the total revenue that publishers derive from sales of the journals.*”⁹⁷

It must also be remarked that open content is just another continuation of the sharing ethic exemplified by the internet that has already been discussed. The implications for technology transfer to developing countries are evident. Freely available online content of peer-reviewed material should provide a manner to access academic research, which is one of the most important tools to allow countries to develop their own technology and strengthen their own research capabilities.

Conclusion

The problem of the digital divide is undoubtedly a complex area of study.

Undoubtedly, some of the most pressing causes are the here are the more obvious connectivity and telecommunications problems that can be evidenced throughout the world, particularly in least developed nations. However, there are some elements of hope with connectivity, as there appears to be a trend towards the use of mobile and wireless technologies that could reduce connectivity costs greatly, hence providing much better opportunities to redress the divide and allow more people around the world to connect to the internet.

The main question must be about the amount and quality of information that is available online for free, or at a reduced cost that the citizens of the world can afford. It is a laudable objective to hope that in the future large numbers of the world's population will have access to the internet, but the question of what awaits them once there must be at the forefront of the debate. Efforts to provide quality content online should also be at the forefront of most policymakers who see the internet as a possible

⁹⁶ Lawrence, S. “Free online availability substantially increases a paper's impact”, *Nature*, May 31, 2001. @: <<http://www.nature.com/nature/debates/e-access/Articles/lawrence.html>>

⁹⁷ Odlyzko, A. "The Economics of Electronic Journals", *First Monday*, Vol.2 No.8, 1997. @: <http://firstmonday.org/issues/issue2_8/odlyzko/index.html>

tool to serve the public interest. This can only be done by extending the publication of those materials online.

One way of doing this is simply to release information into the public domain. This will continue to take place as the sharing ethic that is exemplified online continues to expand. However, there may be circumstances in which some of those works will have to be shared online through some sort of permissive licence that reserves some rights to the authors. These licences are part of the open access movement.

This article does not propose to serve as the final word on the subject of the digital divide, but it is the author's view that the discussion has been centred for too long on the issue of connectivity. The problem of content is one that is already occupying large numbers of people through the creation of open access journals and the use of the rapid emergence of the Creative Commons movement. Policymakers should join this discussion and bring content to the forefront of the debate.